

Amendment and Response

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Serial No.: 10/728,446

Confirmation No.: 9352

Filed: 5 December 2003

For: SILVER COATINGS AND METHODS OF MANUFACTURE

Amendments to the Claims

This listing of claims replaces all prior versions, and listings, of claims in the above-identified application:

Listing of Claims

1. (Currently Amended) A method of coating silver compounds on a substrate, the method comprising:

providing a sparingly soluble silver-containing compound selected from the group consisting of silver carbonate, silver oxide, silver stearate, silver phosphate, silver thiocyanate, and combinations thereof,

providing an ammonium-containing compound,

combining the sparingly soluble silver-containing compound with the ammonium-containing compound to form an aqueous solution prior to coating on a substrate,

subsequently, coating the solution formed by combining the silver-containing compound and the ammonium-containing compound on a substrate,

and drying the solution to form a coated substrate that is stable against darkening when exposed to at least one of visible light, ultraviolet light, electron beam, and gamma ray sterilization;

wherein the dried coating comprises the sparingly soluble silver-containing compound deposited from the coating solution, and further wherein the dried coating is essentially free of silver metal.

2. (Original) The method of claim 1, wherein the solution has a pH of about 9.

3. (Original) The method of claim 1 wherein the solution is formed at less than 40 °C.

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4. (Original) The method of claim 1, wherein the solution is coated at less than 40 °C.
5. (Cancelled)
6. (Previously Presented) The method of claim 1 wherein the silver-containing compound is silver oxide.
7. (Original) The method of claim 1, wherein the ammonium-containing compound is selected from the group consisting of ammonium carbonate, ammonium pentaborate and ammonium acetate.
8. (Original) The method of claim 7 wherein the ammonium-containing compound is ammonium carbonate.
9. (Original) The method of claim 1, wherein the silver-containing compound forms a silver-ammonium complex when combined with the ammonium-containing compound.
10. (Original) The method of claim 1, wherein the silver-containing compound remains on the substrate after drying the substrate while the remainder of the coating is volatilized.
11. (Original) The method of claim 1, wherein the ammonium-containing compound is essentially all removed after drying the substrate.
12. (Original) The method of claim 1, further comprising the step of adding an oxidizing agent to the solution.
13. (Original) The method of claim 1, further comprising the step of adding an oxidizing agent to the coated substrate.

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14. (Previously Presented) The method of claim 1, wherein the substrate is selected from the group consisting of a nonwoven gauze, a woven gauze, a polyester fiber, a foam, and a hydrocolloid.

15. (Currently Amended) A method of coating silver compounds on a substrate, the method comprising:

providing silver oxide,

providing ammonium carbonate,

combining silver oxide with ammonium carbonate to form an aqueous solution prior to coating on a substrate,

subsequently, coating the solution formed by combining the silver oxide and the ammonium carbonate on a substrate,

and drying the solution to form a coated substrate that is stable against darkening upon exposure to at least one of visible light, ultraviolet light, electron beam, and gamma ray sterilization;

wherein the dried coating comprises the silver oxide deposited from the coating solution, and further wherein the dried coating is essentially free of silver metal.

16. (Original) The method of claim 15, wherein the solution has a pH of about 9.

17. (Original) The method of claim 15, wherein the solution is formed at less than 40 °C.

18. (Original) The method of claim 15, wherein the solution is coated at less than 40 °C.

19. (Original) The method of claim 15, wherein the silver oxide forms a silver-ammonium complex when combined with the ammonium carbonate.

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20. (Original) The method of claim 15, wherein the silver oxide is the only compound from the solution that remains on the substrate after drying the substrate.
21. (Original) The method of claim 15, wherein the ammonium carbonate is removed after drying the substrate.
22. (Original) The method of claim 15, further comprising the step of adding an oxidizing agent to the solution.
23. (Original) The method of claim 15, further comprising the step of adding an oxidizing agent to the coated substrate.
24. (Original) The method of claim 15, wherein the substrate is selected from the group consisting of a nonwoven gauze, a woven gauze, a polyester fiber, a foam, a film and a hydrocolloid.
25. (Previously Presented) An article made by the method of claim 1 wherein the article impregnated with sparingly soluble silver-containing compound is free of the ammonium compound or residual components of the ammonium compounds.
26. (Previously Presented) An article made by the method of claim 15 wherein the article impregnated with silver oxide is free of compounds introduced during the application of the solution other than the silver oxide.
27. (Currently Amended) A method of coating silver compounds on a substrate, the method comprising:
 providing silver oxide,
 providing an ammonium-containing compound,

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combining silver oxide with the ammonium-containing compound to form an aqueous solution prior to coating on a substrate,

adding an oxidizing agent to the aqueous solution in an effective amount to increase the valence state of the silver oxide,

subsequently, coating the solution formed by combining the silver oxide and the ammonium-containing compound and the oxidizing agent on a substrate,

and drying the solution to form a coated substrate that does not darken upon exposure to visible light;

wherein the dried coating comprises the silver oxide deposited from the coating solution, and further wherein the dried coating is essentially free of silver metal.

28. (Original) The method of claim 27, wherein the solution has a pH of about 9.
29. (Original) The method of claim 27, wherein the solution is formed at less than 40 °C.
30. (Original) The method of claim 27, wherein the solution is coated at less than 40 °C.
31. (Original) The method of claim 27, wherein the ammonium-containing compound is selected from the group consisting of ammonium carbonate, ammonium pentaborate and ammonium acetate.
32. (Original) The method of claim 31 wherein the ammonium-containing compound is ammonium carbonate.
33. (Original) The method of claim 27, wherein the silver oxide forms a silver-ammonium complex when combined with the ammonium-containing compound.

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34. (Original) The method of claim 27, wherein the silver oxide is the only compound from the solution that remains on the substrate after drying the substrate.
35. (Original) The method of claim 27, wherein the substrate is selected from the group consisting of a nonwoven gauze, a woven gauze, a polyester fiber, a foam, a film and a hydrocolloid.
36. (Cancelled)
37. (Original) A wound dressing made by the method of claim 1.
38. (Original) A wound dressing made by the method of claim 15.
39. (Original) A wound dressing made by the method of claim 27.
- 40-44. (Cancelled)
45. (Previously Presented) The method of claim 1, wherein the substrate is a film.
46. (Previously Presented) The method of claim 1 wherein the coating step is carried out by spray coating.
47. (Previously Presented) The method of claim 15 wherein the coating step is carried out by spray coating.
48. (Currently Amended) A method of coating silver compounds on a substrate, the method consisting essentially of:

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providing a sparingly soluble silver-containing compound selected from the group consisting of silver carbonate, silver oxide, silver stearate, silver phosphate, silver thiocyanate, and combinations thereof,

providing an ammonium-containing compound,

combining the sparingly soluble silver-containing compound with the ammonium-containing compound to form an aqueous solution prior to coating on a substrate,

subsequently, coating the solution formed by combining the silver-containing compound and the ammonium-containing compound on a substrate,

and drying the solution to form a coated substrate that is stable against darkening when exposed to at least one of visible light, ultraviolet light, electron beam, and gamma ray sterilization;

wherein the dried coating comprises the sparingly soluble silver-containing compound deposited from the coating solution, and further wherein the dried coating is essentially free of silver metal.

49. (Currently Amended) A method of coating silver compounds on a substrate, the method comprising:

providing a sparingly soluble silver-containing compound selected from the group consisting of silver carbonate, silver oxide, silver stearate, silver phosphate, silver thiocyanate, and combinations thereof,

providing an ammonium-containing compound,

combining the sparingly soluble silver-containing compound with the ammonium-containing compound to form an aqueous solution prior to coating on a substrate,

subsequently, coating the solution formed by combining the silver-containing compound and the ammonium-containing compound on a substrate, wherein the coating step is carried out with a single coating solution in a single coating step,

and drying the solution to form a coated substrate that is stable against darkening when exposed at least one of visible light, ultraviolet light, electron beam, and gamma ray sterilization;

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wherein the dried coating comprises the sparingly soluble silver-containing compound deposited from the coating solution, and further wherein the dried coating is essentially free of silver metal.

50. (Currently Amended) A method of coating silver compounds on a substrate, the method consisting of:

providing a sparingly soluble silver-containing compound selected from the group consisting of silver carbonate, silver oxide, silver stearate, silver phosphate, silver thiocyanate, and combinations thereof,

providing an ammonium-containing compound,

combining the sparingly soluble silver-containing compound with the ammonium-containing compound to form an aqueous solution prior to coating on a substrate,

subsequently, coating the solution formed by combining the silver-containing compound and the ammonium-containing compound on a substrate,

and drying the solution to form a coated substrate that is stable against darkening when exposed to at least one of visible light, ultraviolet light, electron beam, and gamma ray sterilization;

wherein the dried coating comprises the sparingly soluble silver-containing compound deposited from the coating solution, and further wherein the dried coating is essentially free of silver metal.